LAMBIE

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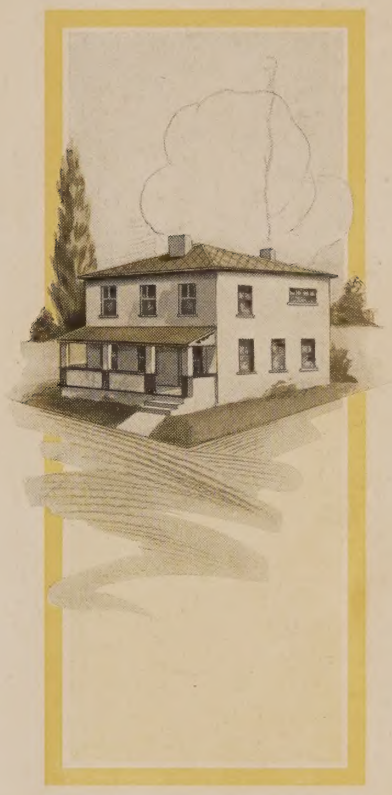

Inexpensive double house built with Lambie Forms
at Youngstown, Ohio

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PERMANENT HOMES *for* WORKMEN

LAMBIE
CONCRETE HOUSE CORPORATION
53 STATE STREET, BOSTON, MASSACHUSETTS
OWNERS OF LAMBIE STEEL FORMS
PATENTED THROUGHOUT THE WORLD

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PERMANENT HOMES *for* WORKMEN

LABOR is in a most unusual state of unrest. Even long-established employees are not proof against the allurement of higher wages and better living conditions, no matter how far distant. As a consequence most manufacturers are struggling with an abnormally high labor turnover that inevitably results in inefficiency, spoiled work, decreased production, and high cost per unit.

INDUSTRIAL HOUSING AS A CURE FOR INDUSTRIAL UNREST

Workmen are drifting to the centers where good clean homes can be secured for themselves and their families, and where they can live in a manner befitting their increased income. Under these conditions the manufacturer who directly or indirectly provides desirable homes for his workmen is assured of a more permanent force and of a smaller labor turnover than his competitor with less foresight.

Akron, Ohio, of rubber fame, passed through a period when manufacturers could not get labor unless tremendously high wages were paid. It was known as a town without homes. Men would not go there and the manufacturers paid out millions of dollars more in wages than would have been necessary if an abundant supply of homes had been available. Other towns suffer from the same curse although in most cases to a lesser degree.

A street of Lambie-built dwellings at Donora, Pa.

It is stated that during 1917 England spent half a billion dollars in meeting the housing problem. There is little doubt that the United States will have to spend an equal amount in 1918 for the same purpose.

Those companies which during the last decade provided healthy and clean living quarters for their employees are now reaping the benefit of their good judgment — and the better labor conditions which they enjoy are in themselves an ample return for their investment. But there has been a tendency to develop only the relatively high-class six or eight-room house with all the modern improvements and a plot of land. Such houses are ideal, but only the higher priced workers can afford to rent them. The real need of today is for good homes for the poorer class of workmen who are at present living in one or two rooms.

THE IDEAL MATERIAL — CONCRETE

For workmen's houses concrete is the ideal material, and monolithic construction the ideal type. Concrete's advan-

Rear view of a row of houses at Donora, Pa.

tages are many and manifest. It is permanent, fire proof, and indestructible, and improves with age. It is clean, sanitary, and vermin-proof, which does much to reduce disease among the laborers. Dampness sometimes resulted when concrete was first used in house construction, but this has been entirely overcome by the use of six-inch walls with air space and plaster.

The construction of concrete houses for ordinary workmen has heretofore been out of the question on account of the cost, but with the aid of steel forms solid seamless concrete dwellings can now be cast at almost as low a cost as that of a wooden house.

Cheap four and six room homes built for miners at Cairnbrook, Pa.

CONCRETE HOUSES HAVE FINANCIAL ADVANTAGES

Although a concrete house is slightly more expensive than an inflammable wooden structure, it has important financial advantages which much more than offset this.

First, the house is absolutely permanent. It requires no repairs on the exterior and will weather the elements for fifty or a hundred years without the necessity of any expenditures except for interior painting. This eliminates the maintenance incident to all wooden, brick, or hollow-tile houses in which the depreciation is much more rapid.

Second, no insurance is required on concrete houses and much lower rates can be obtained on the contents.

Lastly, not only are such houses much easier to mortgage, but a 20 to 25 per cent greater mortgage can be raised on a permanent structure.

CONCRETE HOUSES WARMER IN WINTER AND COOLER IN SUMMER

Comparative experiments made on concrete and frame houses prove conclusively that the former are far less expensive to heat, particularly when properly finished with air space between the plaster and the outside wall. The solid monolithic construction of a concrete house reduces air leakage, the primary cause of heat waste, and the thickness of the walls keeps the interior cooler in summer as well as warmer in winter.

CONCRETE BUILDINGS CAN BE ERECTED WITH GREAT SPEED

The financial and other advantages of concrete houses have been emphasized, but the matter of speed of construction is no less important. Permanent industrial homes

can be erected much faster in concrete than of other materials. For this reason concrete is the ideal material when a group of dwellings must be erected quickly.

Furthermore, with durable forms, as in the case of the Lambie form described herein, processes and operations can be readily standardized and ordinary workmen can be trained to do the work with efficiency and dispatch. In the erection of an industrial village each process goes on continuously, and the gangs proceed systematically from house to house. In this way dwellings can be completed in short order. At Donora, where ten sets of forms were used, a house was finished every forty hours.

LABOR AND MATERIALS FOR CONCRETE READILY OBTAINABLE

With industrial conditions as they are at the present time, the cost and the difficulty of obtaining wood, brick, and hollow tile for building purposes are very great. The materials for concrete, however, are to be had in abundance. Sand, gravel, slag, and broken stone are always at hand;

A row of Lambie-built houses at Crescentdale, Pa.

Interiors of concrete houses at Donora, Pa.

cement and the simple steel reinforcing rods can be easily secured. Labor, likewise, is not difficult to obtain and does not need to be highly skilled.

A NEW ERA WHEN BIG CONTRACTORS BUILD LARGE NUMBERS OF SMALL HOUSES

Heretofore most industrial housing propositions have been undertaken by small, under-equipped contractors, usually of local reputation, who could rarely build more than a few houses at a time, and who would have required an endless time to handle an important development.

One hundred concrete houses built with Lambie Forms at Donora, Pa., for the American Steel a

Now, however, the large contractor has entered the field, using the same equipment and adopting the same principles of organization and management as on the jobs of great magnitude. With such an organization any number of houses can be erected almost simultaneously, while duplication and standardization have greatly reduced the cost of each. In reality, the principles of standardization which have proved so successful in the construction of industrial plants are applied to the building of dwelling houses.

HOW LAMBIE FORMS MAKE CHEAP CONCRETE HOUSES POSSIBLE

Until the perfection of durable steel forms by Frank D. Lambie, each concrete house required a special set of wooden forms which ran the cost so high that it was not practical to build in this material.

eel and Wire Company. Contractors, Aberthaw Construction Company, Boston, Mass.

But with the introduction of Lambie steel forms designed for repeated use the cheap concrete house became an actuality. The hundred concrete houses erected recently at Donora, Pa., are a striking example of the suitability of this type of form for handling a large job with efficiency and dispatch. Other illustrations show a wide variety of structures which have been built with them.

ONLY SUCCESSFUL FORM

If success is measured by accomplishment the Lambie is the only successful form on the market, since no other has ever been actually used on a house construction contract of any large size. In addition to this the Lambie form enjoys the distinction of being the only one used in this way by any firm of engineering contractors of national reputation.

The Lambie form is not a new device. It was successfully used ten years ago, and a number of handsome concrete houses erected in Montclair, New Jersey, stand as evidence of the ideal houses which can be erected with it. These houses have not required a cent's worth of repairs in all this period except in the matter of interior trim and finish. With a wooden house, on the other hand, repainting would have been necessary at least twice and the fire insurance would have constituted an annual item of considerable importance.

Since the erection of these first Montclair houses there has been built a continuous succession of Lambie-cast dwellings of all types, ranging in size from four-room miners' cottages to large thirteen-room residences.

ORNAMENTAL WORK POSSIBLE

A glance at the illustrations in this book will show that considerable architectural variety and beauty of detail are possible in houses built with Lambie forms, and that their use does not mean that all houses in a development must be alike. In fact, an infinite number of styles, sizes, and shapes of buildings are possible.

As much ornamentation as should ordinarily be carried out in concrete is possible with Lambie forms. These are most adaptable and allow for porches, panel work on porches, piazzas, projecting window sills and stair landings, cornices and bay windows. Different heights of ceiling can be secured with the same forms and any width of cornice.

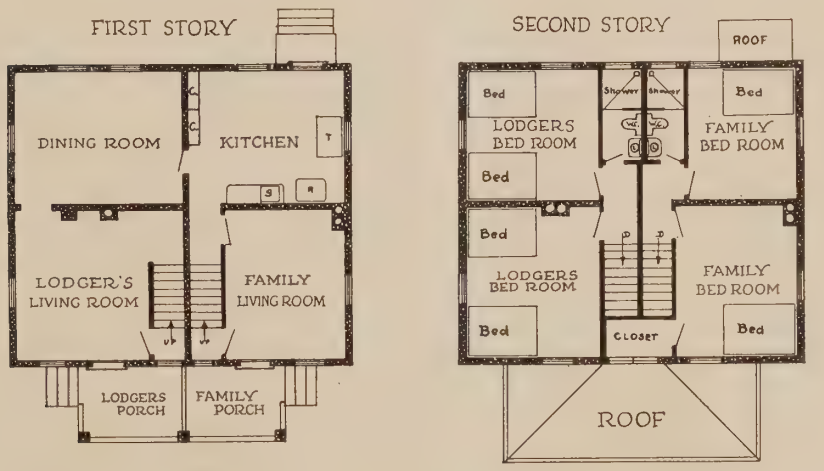
BETTER THAN WOODEN FORMS

The outstanding advantage of Lambie forms over wood is the greatly decreased cost of the finished house. The forms are rented by this company for an amount which is only a small part of the cost of the rough lumber which would be necessary, and the labor to erect them is low

as compared with that where wood is used. Actual cost figures showing the savings are given in a subsequent paragraph.

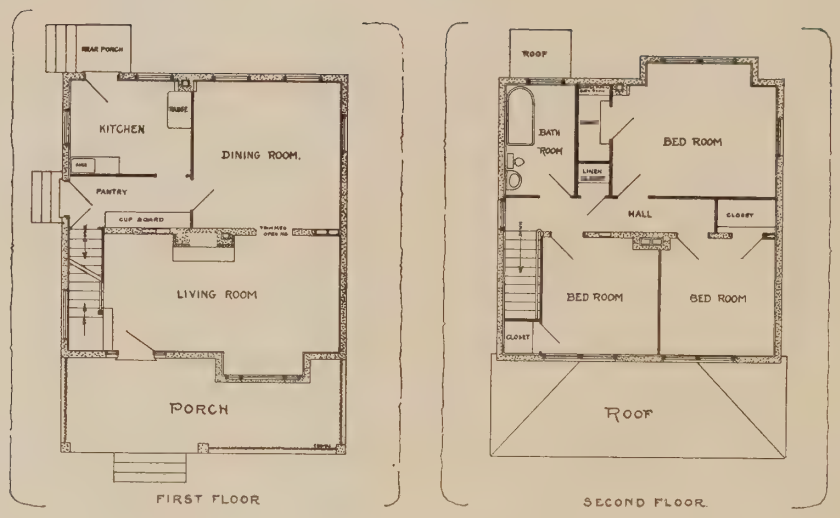
A second important advantage of Lambie forms is that they can be very readily and accurately lined up. They are thus much superior to wooden forms which require bracing and supports to keep them true to line and free from the distortion due to the pressure of wet concrete. The Lambie forms are so strongly and accurately built that the labor of setting is reduced to a minimum and once set they need no bracing at all. Not only so, but they are strong enough to carry the weight of a hoisting derrick used to raise barrows of concrete.

As an additional point of superiority in favor of Lambie forms, mention should be made of the high quality of the finished work. The lines of the concrete are true and sharp, and the surface is free from the irregularities which would be caused by imperfections in lumber used for forms.



Architect, L. Brandt, Pittsburg

A very practical arrangement for a boarding house. *See page 17*



This floor plan has proved successful for single or double six-room houses

Concrete being a comparatively new material for house construction, the tendency is to cover it up and make it look like something else. Stucco, with which a concrete wall is usually finished, is expensive to apply and is quite unnecessary, as with the present development in the manufacture of Lambie steel forms it is possible to get a surface that is perfectly true and smooth, and only needs rubbing with carborundum stone in order to get a perfectly even texture and color which is every bit as satisfactory as the face of a brick wall.

When it comes to labor, Lambie forms offer another decided advantage over wood in that a much smaller percentage of skilled men is necessary. In the latter case practically the entire force must be experienced in concrete work, whereas with Lambie forms experience is needed only for purposes of supervision and common labor is otherwise sufficient.

TYPICAL PLANS

In this publication are illustrated a number of detached dwellings to emphasize the possibilities of construction with Lambie forms, and to show the wide variety of houses which may easily be built. In developments where the tenants can pay only a low rental the four-room house such as shown at bottom of page 8 is very practical and in great demand. This house can be built with the same floor plans, either as a single or double dwelling, or in rows, and with or without bathtubs or toilets. When built in rows, four-room houses are usually cheaper to build, easier to heat, and more impressive in appearance.

A five-room house of similar type is also desirable. This is simple in construction, with two rooms downstairs and three chambers and a bathroom upstairs.

For the higher salaried workmen the single and double six-room houses can be provided. Floor plans for these are shown opposite.

In addition to these individual houses there is frequently need for boarding houses which can be advantageously run by married couples. The plan shown on page 15 is ideal for this purpose, since the family quarters are entirely separate from those of the boarders and the only point where the two come in contact is through the dining room. Separate entrances, living rooms, stairways, and bathrooms are provided.

Small four-room houses, with or without bath or toilet, can be built on these plans, singly, doubly, or in rows.

The Lambie Concrete House Corporation is in position to co-operate with manufacturers and others in securing desirable plans for houses of any number of rooms or to suit the incomes of any particular class of workers.

Successive steps in building a house with Lambie Forms.

Basement to first floor—
See also opposite page

Erecting forms and placing concrete—

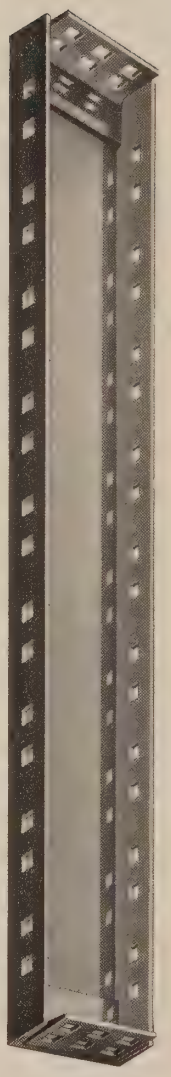
First floor to roof

DESCRIPTION OF LAMBIE FORMS

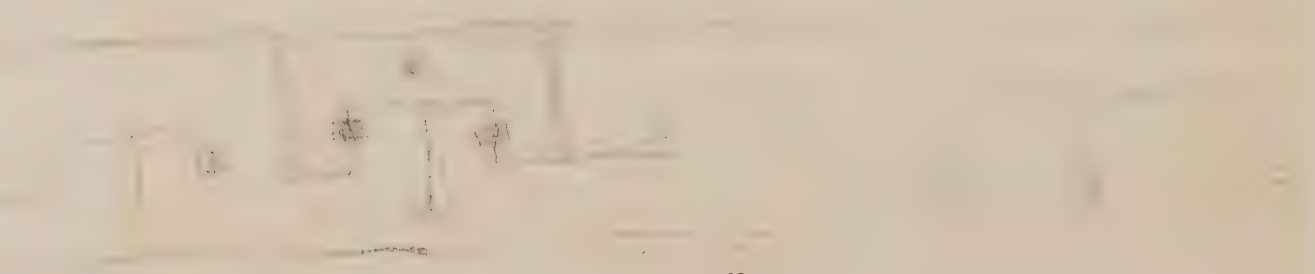
Lambie forms are composed of steel channel irons, as shown in the illustration. The individual pieces are placed on end side by side and are then fastened together with clips and wedges. A special angle iron liner is then inserted in the notches to insure a perfectly straight surface. In order that the inside and outside wall forms shall be the proper distance apart small pieces of wood called "spreaders" are placed between them and the concrete is then poured, the spreaders being removed as the level of concrete rises in between the forms. To insure against the bulging of the wall the inner and outer forms are tied together by strap irons. At the same time as the wall forms are erected the forms for the floor or roof above are put in place. Then both the side walls and the floor are poured, so that a complete story in the shape of an inverted box is cast at one time.

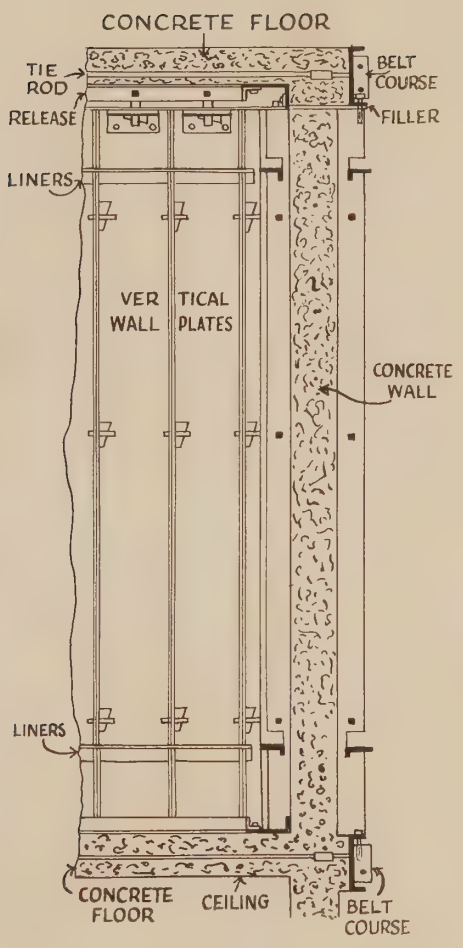
The pictures on pages 18 and 19 show the successive steps in the construction of a house with the aid of Lambie forms. These cover all the detailed points in connection with the construction.

When the forms for the basement walls are erected, their tops are attached to a special member called the belt course, of which there is one on each side of the house. These prevent the tops of the forms from getting out of place, and are cross-braced by steel rods which extend from one side of



One of the Lambie Steel Plates





Assembly drawing of Lambie Steel Forms

the house to the other. This reinforcing is shown in the illustration herewith. After the floor is poured these rods remain in the concrete and act as reinforcing for the floor. When the forms for the walls are taken down the belt course is left in place and the forms from the lower story are lifted up and placed on top of the belt course, being attached thereto by clips and wedges. Since this course is practically a part of the building during the process of construction it gives an absolutely solid foundation upon which the forms rest so that there is no possibility of their getting out of alignment. When finally removed the belt course leaves a projection around the building which adds to its appearance. This ornamental belt is optional and if desired the wall can be left flush.

Steel reinforcing for increasing the strength of walls and floors can be placed quite readily when

Starting at the top, residences are located as follows:

Montclair, New Jersey
Tompkinsville, Staten Island
Salem, Mass.
Newark, Ohio

A few residences built with Lambie Forms

Lambie forms are used, and the amount of concrete required may be thereby reduced.

ACTUAL RESULTS

As previously stated, Lambie forms have proved entirely practical in the construction of many residences of different types, some of which are shown in the accompanying illustrations. The practicability of the forms has also been demonstrated very successfully in the construction of industrial houses on a large scale, and four different groups of such houses have been finished in the past year. Of these the one hundred houses built at Donora, Pa., for the American Steel and Wire Company by the Aberthaw Construction Company are the most conspicuous. This job was carried on under disadvantageous conditions, such as high cost of materials, acute shortage of labor, and slow freight movements. Costs were also affected by the fact that the houses were built on the side of a hill, which made it difficult to move the forms. In spite of these factors, however, very satisfactory results were obtained and the figures given on page 24 and furnished by the Aberthaw Construction Company are of special interest.

TIME TAKEN FOR CONSTRUCTION

With ten sets of Lambie forms and an average of 192 workmen, seventy-one houses were cast in four calendar months, an average of fifteen and one half working days being required to cast each house. Several houses were cast in thirteen days each, and, from the results obtained, it is estimated that with one set of forms, four carpenters, and four trained helpers, the minimum time in which a house such as that shown in the illustrations could be poured is eight days.

COSTS

Six different types of houses were built at Donora, the costs varying considerably on account of the difference in the details of the plans. Some interesting unit costs for assembling, erecting, and stripping the Lambie forms were obtained as follows:

ON DOUBLE HOUSES	
Lowest cost per square foot	4.56 cents
Average cost per square foot for eight houses of same type	5.43 cents
ON SINGLE HOUSES	
Lowest cost per square foot	4.66 cents
Average cost per square foot on twenty-four houses of same type	5.60 cents

If these figures are compared with the cost of erecting concrete houses with wooden forms a very substantial saving can be shown. This cost is at least twelve cents per square foot, including the cost of lumber, nails, oil, etc., and assumes that the same wooden forms are used for at least four houses.

LAMBIE FORMS RENTED TO YOUR CONTRACTOR

To build a house with Lambie forms is not an expensive process and requires no heavy outlay of capital. Neither is it a difficult undertaking, as men can easily be instructed as to the proper use of the forms. The Lambie Concrete House Corporation does not construct houses, but owns the patent rights for the forms in every important civilized country in the world. The company will lease these rights or the forms themselves and will be glad to quote a lump sum price per house for the use of the forms for a definite period. The price varies with the size of the house.

Inquiries should be addressed to the

Lambie Concrete House Corporation

53 STATE STREET, BOSTON, MASS.

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